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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/856,710	02/26/2002	Benoit Boulanger	1721-30	2996

7590 10/17/2003  
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EXAMINER
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LEE, JOHN D

ART UNIT	PAPER NUMBER
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2874

DATE MAILED: 10/17/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

09/856,710

Applicant(s)

BOULANGER ET AL.

Examiner

JOHN D. LEE

Art Unit

2874

— The MAILING DATE of this communication appears on the cover sheet with the correspondence address —  
 Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 12 SEPTEMBER 2003
- 2a) ☒ This action is FINAL. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-12 and 14-40 is/are pending in the application.
- 4a) Of the above claim(s) 1-4, 6-12, 14-19, 21-32, and 34-39 is/are withdrawn from consideration.
- 5) ☒ Claim(s) 1-4, 6-12, 14-19, 21-32, and 34-39 is/are allowed.
- 6) ☒ Claim(s) 5, 18, 33, and 40 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 09-12-03 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

## Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

## Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_.
- 4) ☐ Interview Summary (PTO-413) Paper No(s) \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

This Office action is responsive to applicant's amendment filed on September 12, 2003. Claims 1-12 and 14-40, all of which have been extensively amended, are pending.

The new drawings containing Figures 2a - 2g have been approved by the Examiner. The drawing objection is therefore withdrawn.

All objections to the disclosure have been obviated. The previously indicated disclosure objections are therefore withdrawn.

Applicant's explanation of the priority claim based on French Application Number 97/14947, filed in France on November 27, 1997, is noted (see the paragraph bridging pages 18 and 19 of applicant's response).

With respect to the previously applied prior art rejections based on the U.S. Patent to Gotoh et al, the arguments advanced by applicant, considered together with the amendments made to the claims, are persuasive and those rejections are withdrawn. The majority of the 35 U.S.C. § 112 problems identified in the previous Office action have also been obviated, although some problems remain (see the 35 U.S.C. § 112 rejection below). Most of applicant's claims are now allowable.

Claim 39 is objected to for the following informality: in the next-to-last line of this amended claim, the word "and" should be inserted before "an". Note that this informality was first pointed out in the previous Office action.

The following is a quotation of the second paragraph of 35 U.S.C. § 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 5, 18, 33, and 40 are rejected under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter

which applicant regards as the invention. In claim 5, in the list of crystal compositions, " $\beta\text{Ba}_2\text{BO}_4$ " should actually be " $\beta\text{BaB}_2\text{O}_4$ ", and " $\text{CsD}_2\text{AsO}_4$ " should actually be " $\text{CsD-AsO}_4$ ". It is noted that applicant's amendment changed these formulae but did not change them correctly (see page 8 of the specification). The incorrect formulations render the claim indefinite. Claim 18 is indefinite because it states that the incident optical beam is a laser beam (*singular*), but that this laser beam comprises one or more laser beams (*plural*). This limitation is self-contradictory and not understood. In amended claim 33, lines 7-8, the term "the side of the crystal" is unclear since the crystal has more than one side (note the term "the opposite side" in line 9). The claim is thus indefinite. It is suggested that the term in lines 7-8 of claim 33 be changed to "one side of the crystal". Claim 40 is totally indefinite. The method being claimed is identified by the word "implementing". This, however, is not a very definitive method step and could mean various things to various people. Moreover, since this claim represents a single-step process, the claim could be considered overly broad (and thus indefinite) if there is more than one embodiment of "implementing" (which appears likely). See MPEP § 2164.08(a).

Claims 1-4, 6-12, 14-17, 19-32, and 34-39 are allowed. As amended, independent claim 1 recites a tunable optical frequency converting device which includes not only a nonlinear crystal with curved input and output surfaces and an optical system for (1) confining and focusing an incident optical beam through the crystal via the input surface and central crystal portion and (2) collimating and directing an emerging (frequency converted) beam from the output surface, but also includes the requirement that either the nonlinear crystal or the incident optical beam be rotatable around an axis of revolution

which is perpendicular to a normal to the input surface of the nonlinear crystal. The U.S. Patents to Gotoh et al and Amano et al (made of record in the previous Office action) represent the closest prior art known. Neither of these documents, alone or in combination, disclose or suggest a tunable optical frequency converting device which includes *all* of the now-claimed features. In particular, these documents lack any suggestion of the rotatable tuning means in its particularly claimed orientation.

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and an advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning the merits of this communication should be directed to Examiner John D. Lee at telephone number (703) 308-4886. The Examiner's normal work schedule is Tuesday through Friday, 6:30 AM to 5:00 PM. Any inquiry of a general or clerical nature (i.e. a request for a missing form or paper, etc.) should be directed to the Technology Center 2800 receptionist at telephone number (703) 308-0956.

to the technical support staff supervisor (Team 2) at telephone number (703) 308-3072, or to the Technology Center 2800 Customer Service Office at telephone number (703) 306-3329.

  
**John D. Lee**  
**Primary Patent Examiner**  
**Group Art Unit 2874**